

AN INTEGRATED APPROACH TO PROVIDE HIGH QUALITY EDUCATION FOR STUDENTS SPECIALIZED IN INFORMATION TECHNOLOGIES

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Discrete mathematics lies at the core of any modern study of computer science providing the mathematical tools and techniques required to design and understand computer systems. The main aim of the course Discrete mathematics for specialty “Software of informational technologies” is to explain the basic concepts of discrete mathematics and logic used in computer science. The topics under consideration are logic and proof, set theory, relations, combinatorics, Boolean functions, graphs and graph models, trees, Turing machines. The theoretical part of the course is illustrated by applications demonstrating how theoretical constructions can be applied within a computing context.

Our vision and purpose of the course “Discrete mathematics” for IT-students in Grodno State University is the topic under consideration.

The main features of our approach to teaching are the following.

Practice-oriented education through project work in teams concerning different applications of discrete mathematics within a computing context. (Examples of such projects are “The use of the program Evaluation and Review Technique (PERT) to schedule the tasks of complicated projects”, “The strategies and algorithms used to solve the traveling sales person problem”, “The algorithms for coloring a graph and their comparison in terms of complexity”, “Graph multicolorings, their use in different models and Grobner Bases”.)

E-support of the course through University data portal including e-versions of lectures, laboratory classes, seminars for quick access to information.

Two languages of teaching – English and Russian. (So the students have an opportunity to choose the language of education and professional knowledge becomes more dynamic and mobile.)

Use of web-technologies for teaching and monitoring the work of students by means of University data portal to maintain creative way of engaging students with learning the subject.

Integration in European educational area through harmonization of content and standards of the course.

System of credits realized in the course forces students to work permanently.

We discuss the results of such approach to teaching of the course and emphasize good preparation of graduates to be lifelong learners and creative specialists.

References

1. Anderson, James A. Automata Theory with Modern Applications / James A. Anderson. – New York: Cambridge University Press, 2006. – 265 p.
1. Rosen, Kenneth H. Discrete Mathematics and Its Applications / Kenneth H. Rosen. – New York: McGraw-Hill, 2012. – 1071 p.